

California Construction Market Analysis

Material Market Influence on Contract Bid Price Trends for Period Ending December 2005



Division of Construction

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I. Executive Summary

Over the past few years, the California Department of Transportation (Department) identified a trend in new construction contract bids that is causing concern. The occurrence of low bids exceeding the engineer's estimates is increasing. This trend suggests a declining level of competition for Department contracts at a time when the Department is experiencing a three to four-fold increase in funding levels for new construction work in fiscal year 2005/2006, compared to the approximate \$1 billion for construction work advertised in fiscal year 2004/2005.

In order to develop an understanding of this trend and its effect on the delivery of projects for fiscal year 2005/2006 and beyond, the Department requested that a "California Construction Market Analysis" be performed. One purpose of this analysis, which was conducted primarily in June and July of 2005, was to identify what factors might be contributing to the recent trend of higher bid prices. The analysis also addressed how the recent trend and its underlying factors would impact the delivery of the Department's future construction program, particularly in the current fiscal year.

As part of the California Construction Market Analysis, "Causes of Bidding Trends and Industry Ability to Respond to Increased Department Funding" (initial analysis) the Department speculated that material market instability may contribute to the trend of low bids exceeding the engineer's estimate. The construction contracting community confirmed that material price instability was in fact influencing their decisions concerning bidding and bid prices on the Department's work. As a result, an analysis was conducted to discover the causes of instability in markets of selected materials, as well as to determine the correlation of that instability to the bid price trend. The initial analysis was limited to steel, cement and aggregates and included data through

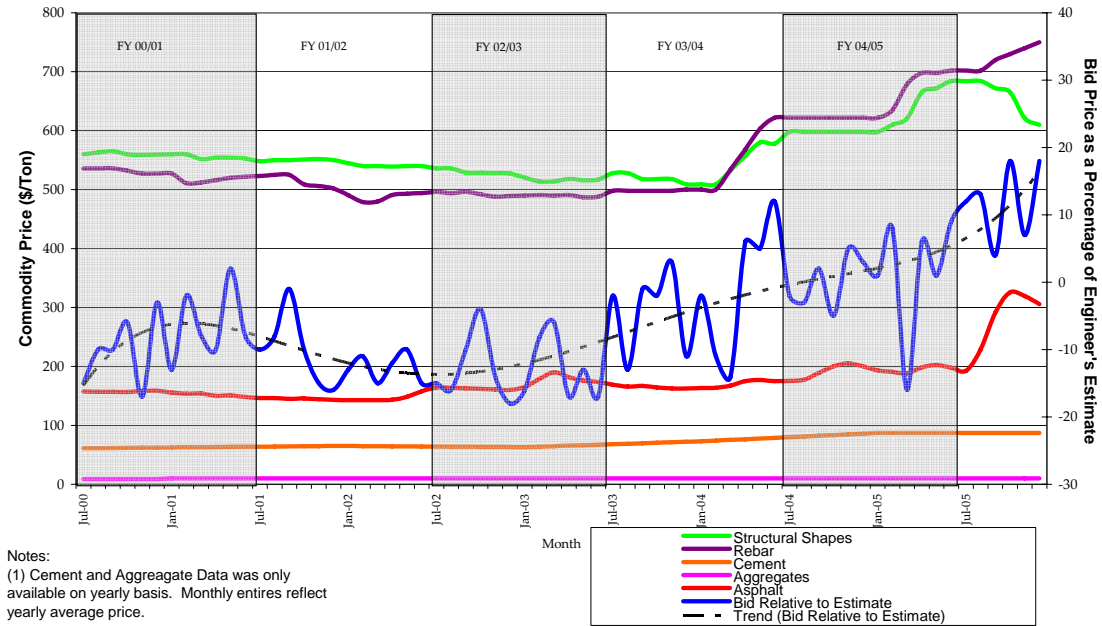
July 2005. After the initial analysis, the Department requested research be done on the paving asphalt market and that the data for the other materials markets be updated through December 2005. This report addresses that request.

As shown in Figure 1 on the following page, the material market analysis confirms that dramatic rise and unpredictability of certain material prices (such as steel, cement and asphalt) appears to have contributed to the increase in bid prices being received by the Department's Office of Office Engineer during fiscal years 2003/2004 and 2004/2005. While the recent price level of structural steel has declined, the general relationship of rising material prices and bids exceeding the Department's estimates appears to be continuing for the 2005/2006 fiscal year.

The continued instability projected for materials market in 2006 for steel, cement, paving asphalt, and aggregates suggests that low bids may continue to exceed the Department's estimates for the near future. To the extent that the Department's estimates incorporate forecasts of cost escalation, the impact of continued market instability on bid prices relative to those estimates may be mitigated.

Throughout the report, bid data for projects over \$200 million were excluded from charts so that these few projects would not skew the trend of the majority. For example, the bid for the San Francisco Oakland Bay Bridge Self Anchored Suspension Project (SAS) alone accounts for the entire difference between the total sum of low bid prices and the total sum of engineer's estimate for that fiscal year.

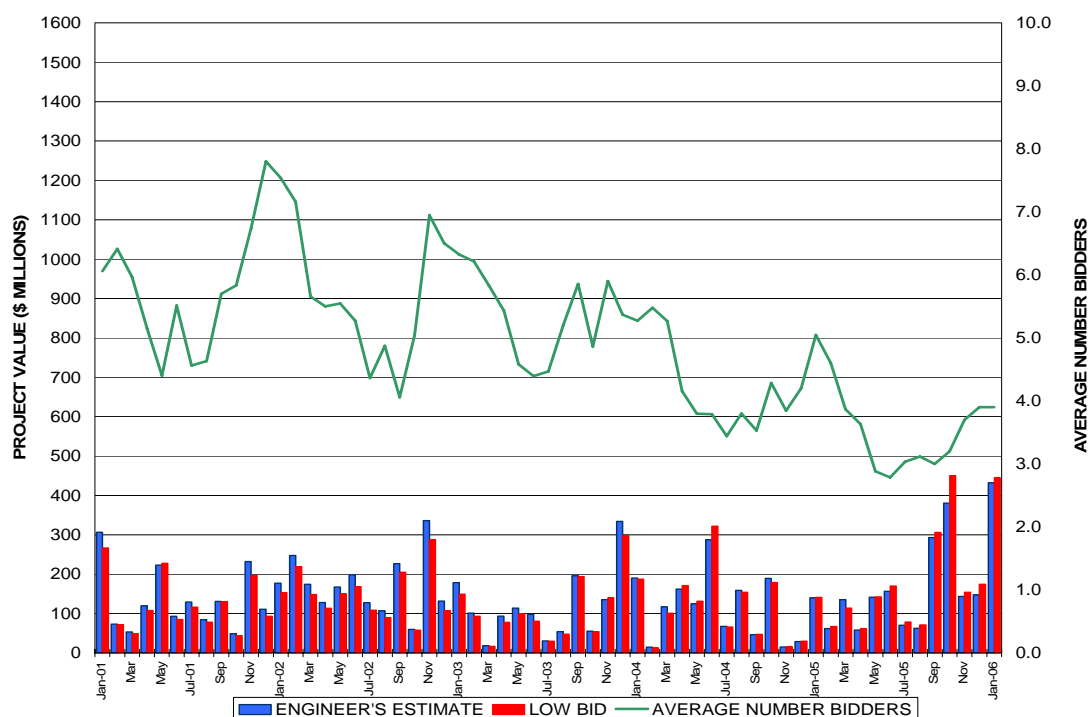
Figure 1 Composite Material Price and Bid Trends



II. Introduction and Background

Low bids on the Department's construction contracts have increased with respect to the Department's estimated cost (engineer's estimate), from historical averages of approximately ninety-five percent (95%) of the engineer's estimate to over one hundred eighteen percent (118%) of the engineer's estimate. Figure 2 is a summary of the Department's construction contract bid information over the last five calendar years.

Figure 2 Construction Contract Bid Information 2000 - 2005



The Department is concerned that the trend of increasing bid prices relative to the engineer's estimates may be indicative of a declining level of competition for Department construction contracts. This concern is magnified in light of a significant increase in funding for new construction contracts in fiscal year 2005/2006. Part of this dramatic increase in funding is the \$1.3 billion in Proposition 42 funds included in the Department's 2005/2006 budget. Should such

funding levels continue for a number of years, the overall volume of Department construction contract work undertaken in the future would be among the highest levels in the Department's history.

In an effort to develop a better understanding of the recent trend and the effect that it may have on the delivery of projects for fiscal year 2005/2006 and beyond, Department management requested that a "California Construction Market Analysis" be performed. One purpose of the initial analysis was to identify what factors might be contributing to the recent trend of increasing bid prices, and to research how those various factors contribute to the trend. The initial analysis also addressed whether or not the recent trends and their underlying factors would adversely impact the delivery of the Department's future construction program, particularly in the current fiscal year.

This report consists of the materials market research from the initial analysis, which has been updated through December 2005, and includes additional research into the asphalt market.

III. Material Market Analysis

This section of the report focuses on the availability and price stability of various materials vital to the transportation construction industry. The availability and/or prices for some of the materials used in the construction of transportation projects have been unstable due in large part to increased demand both here in the United States and abroad. This instability appears to have had an effect on both the number of contractors bidding on Department projects and on the bid amounts relative to the estimated cost.

As described in the initial analysis, a number of the survey respondents indicated that material price instability was one reason for curtailing bidding on the Department's work and/or influencing the prices bid. Furthermore, the continued uncertainty of material availability and prices was seen as having the potential to continue impacting future Department work either through a continued decline in the number of bidders or more likely through low bids that exceed the engineer's estimate. The latter situation is particularly likely to occur on the larger Department contracts with significant construction timelines. These conditions will subject bidders to the increased risk associated with projecting inherently unstable material prices well into the future.

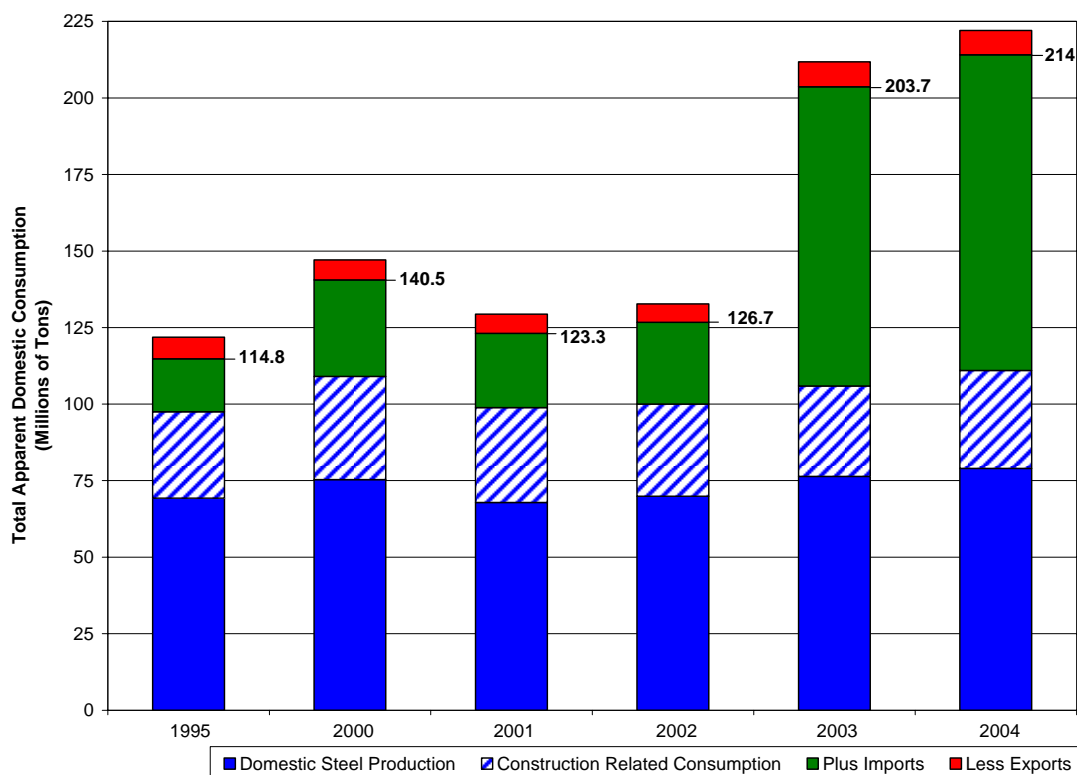
Following are brief reviews of the markets for some of the main materials important to the Department's work.

A. Steel

Steel in various forms constitutes an important component in the Department's construction contracts. Figure 3 is a summary of domestic steel production over the last several years along with data for domestic consumption, imports, exports, and construction industry-specific consumption.

As seen in Figure 3, domestic steel production from 1995 through 2002 ran at approximately one hundred (100) million tons per year. Exports during that time frame typically ran between six (6) and seven (7) million tons per year and imports were typically in the range of thirty (30) million tons per year. The figures indicate that during the time frame domestic consumption of steel was one hundred fifteen (115) million to one hundred forty (140) million tons per year with the construction industry steadily using approximately one quarter (1/4) of that figure or thirty (30) million tons per year.

Figure 3 Domestic Steel Consumption and Production



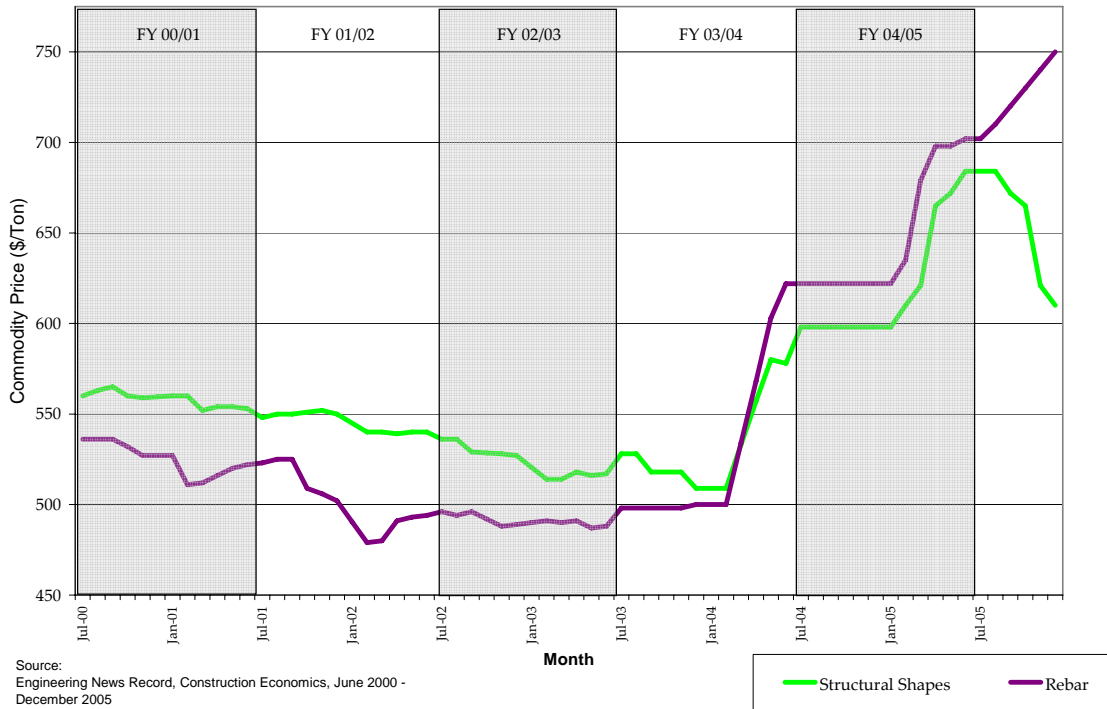
Source: Equity Research, April 29, 2005.

Imports during 2003 and 2004 were dramatically higher at one hundred five (105) and one hundred ten (110) million tons per year, respectively. The level of imports nearly equaled the domestic production for those periods. Since overall domestic consumption of steel had not changed in the years immediately prior to

2003, the apparent reason for the significant increase in steel imports was to build stockpiles to take advantage of the increase in steel prices occurring during that time frame. Figure 4 provides a summary of certain domestic steel prices from mid-2000 through 2005.

Figure 4

Steel Price Trends

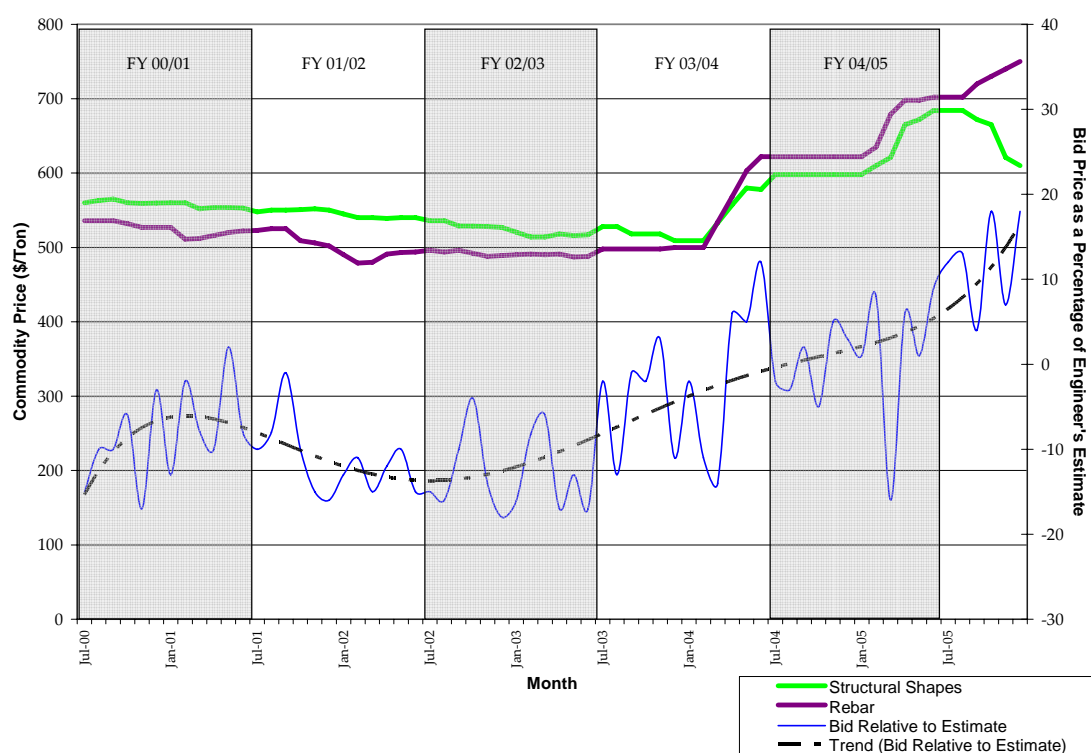


As shown in Figure 4, steel prices experienced a ten to twenty percent (10-20%) increase during the period from June 2003 to June of 2004 from approximately \$500-\$525 per ton to a range of \$550-\$625 per ton. This dramatic increase in the price of steel was due, in large part, to the increased consumption of steel in China.¹ Following a period of relative stability during the latter half of 2004, prices again took a dramatic turn upward throughout 2005. While prices for structural steel shapes returned to near those of 2004 levels by the end of the year, prices for rebar continued to escalate significantly throughout the period. Rebar

¹"Outlook for the Steel Industry," The Wall Street TRANSCRIPT, May 2, 2005.

prices in December 2005 reached \$750 per ton which represents a fifty percent (50%) increase from the June 2003 level. Figure 5 shows that the rise in the price of the of steel products correlates somewhat to the increase in the difference between the Department's engineer's estimates and the low bid prices starting during the latter half of fiscal year 2003/2004 and continuing into the current fiscal year.

Figure 5 **Steel Price Levels and Bid Data**



A detailed analysis of specific projects was beyond the scope of this report, however it is reasonable to assume that a number of contracts included rapidly escalating steel prices not reflected in the Department's engineer's estimates. Absent those conditions, the total sum of low bids in comparison to the total sum of engineer's estimates may reflect the historical average of approximately ninety-

five percent (95%). Accordingly, the instability of steel prices must be considered as one of the principal causes of low bid prices exceeding the engineer's estimate.

While consuming more steel during the 2003/2004 period, China had also been increasing their own production capacity to the point that in mid-2004 they were no longer a large importer of steel.² China is also expected to continue to increase its own steel production capacity in the future. This and a general slowing of economic growth in China could cause global steel prices to drop over the next five years.³ However, short-term domestic steel prices may remain at current levels because domestic producers are selling at discounted prices to foreign markets in order to maintain high domestic prices.⁴ This suggests that the Department could continue to see its low bid prices exceeding its engineer's estimates for a number of years, particularly in light of "Buy America" provisions.

B. Portland Cement

Figure 6 shows the amount of domestic production and consumption of cement, another integral component in the Department's wide-ranging construction contracts. It shows that the United States demand for cement in 2004 was approaching one hundred twenty (120) million tons, which was an all time high. Imports of about twenty-seven (27) million tons were needed to fill the gap between domestic production and demand, continuing a historical trend over the last several years. Forecasts for 2005 and beyond indicate even greater demand for the commodity.

²"Outlook for the Steel Industry," The Wall Street TRANSCRIPT, May 2, 2005.

³"Materials," Engineering News-Record, Pg 13. Vol. 254 No. 3, January 24, 2005.

⁴Tumazos, Cheung & Saha, "Steel; Exports Rise in 2005..." Prudential Equity Group, LLC, April 29, 2005.

Figure 6 Domestic Cement Production and Consumption

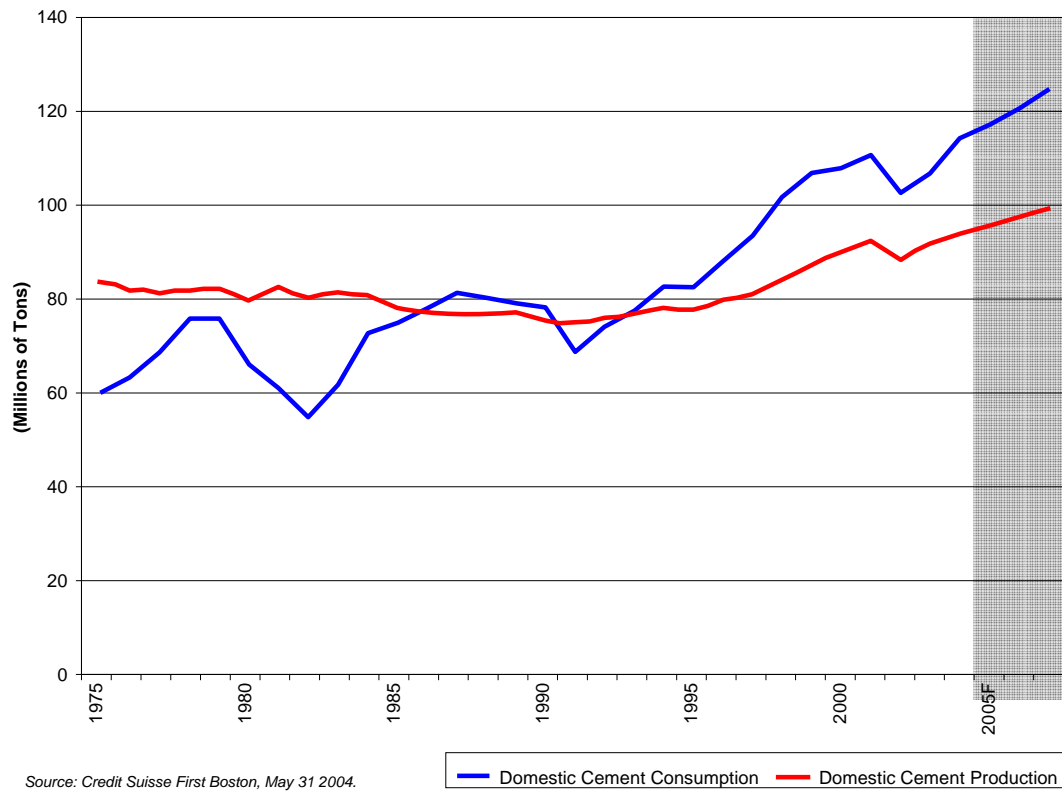
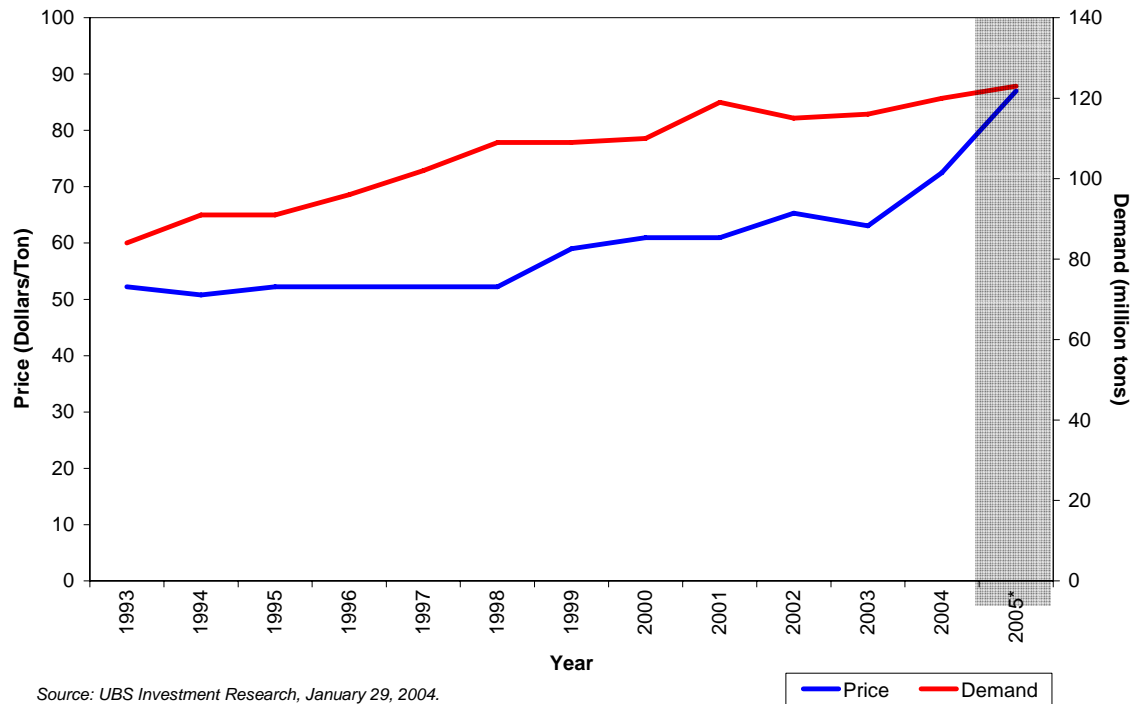


Figure 7 shows the historical relationship between the demand for cement and the price of the commodity.

Figure 7 **Demand and Price Relationship for Cement**

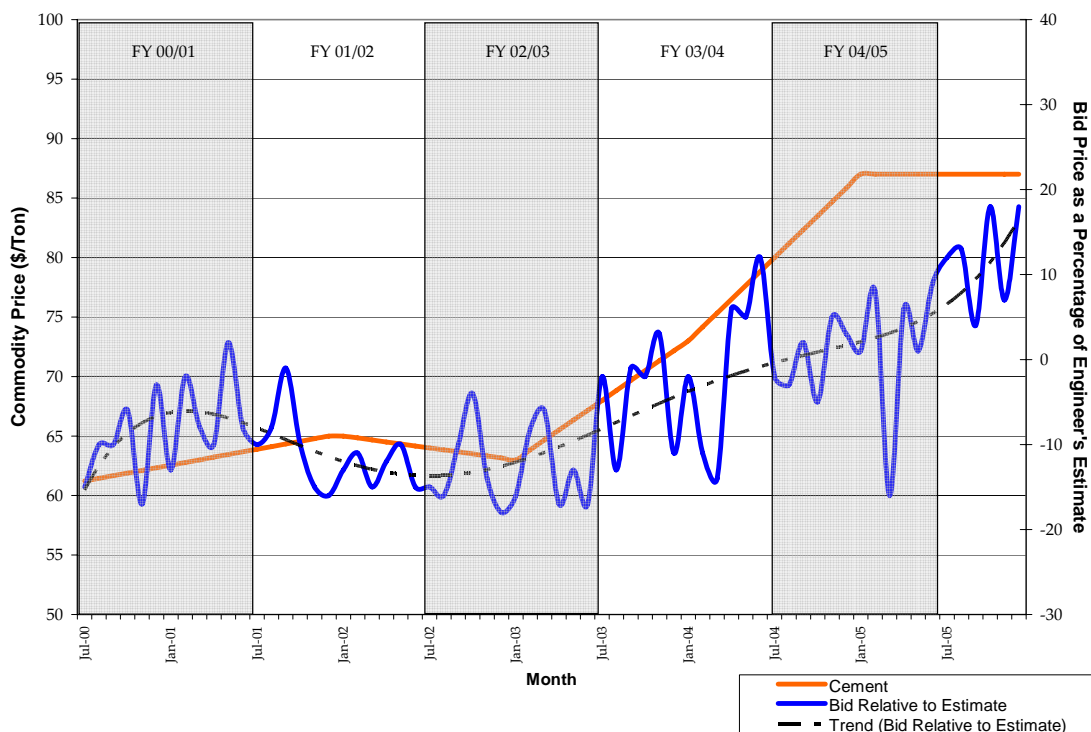


Strong demand for the material, along with increased freight rates, higher energy costs, and a weakening dollar abroad, has driven producers to raise prices nearly thirty-five percent (35%) since the beginning of 2004. Increases in cement prices may also be caused by a decrease in competition in the market due to buy outs of domestic cement manufactures and ready-mix plants, by three major global cement producers.

Figure 8 on the next page shows that the timing of the rise in cement prices correlates to the spikes in bid price levels significantly exceeding the engineer's estimates during fiscal year 2003/2004. Cement price instability must be considered as one of the principal causes of the trend of low bid prices exceeding the engineer's estimate.

Figure 8

Cement Price Levels and Bid Data



The demand for cement is expected to continue to rise in the future due to the high capital costs associated with production expansion⁵, but the supply is not anticipated to keep pace. Forecasts for 2006 indicate a continued rise in price levels in the two to three percent (2-3%) range,⁶ despite a reduction in the duty on Mexican cement scheduled to occur in April. This suggests that the trend of low bids exceeding the Department's estimates is likely to continue, particularly in light of the retrospective nature of the engineer's estimates and the significant role that the material plays in the Department's construction contracts.

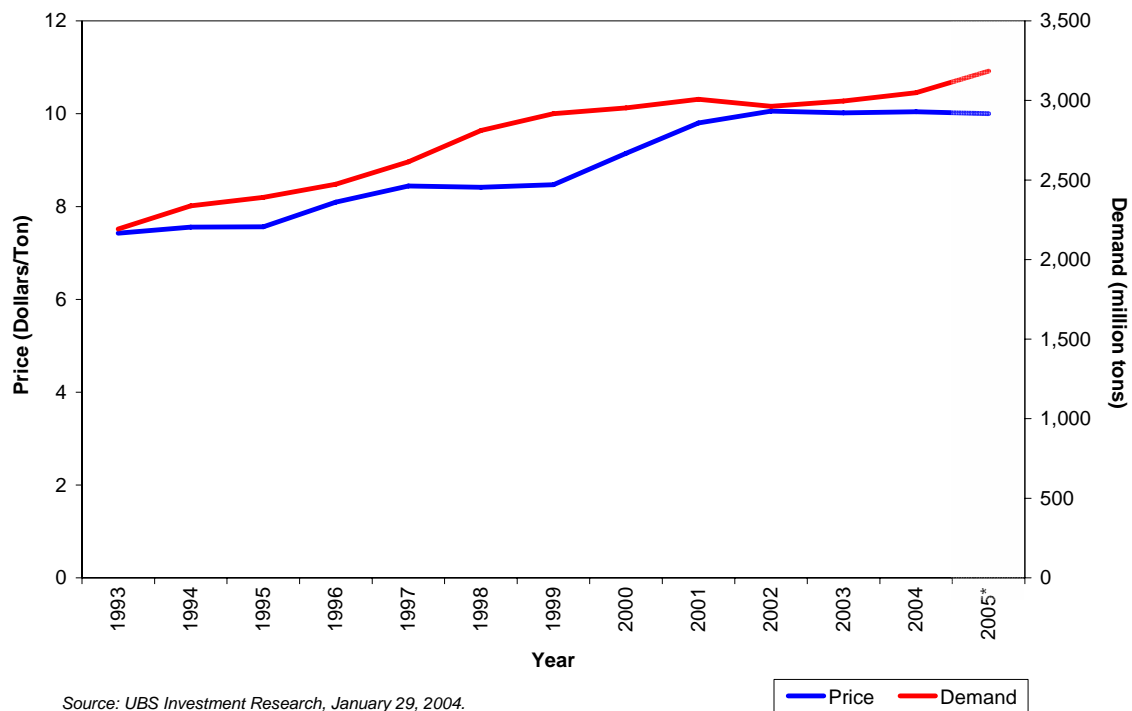
C. Aggregates

The third material assessed as part of the initial analysis was aggregates. The domestic demand for aggregates in 2004 was over three thousand (3,000)

⁵David Brock, Roger Collison, "Building Materials," Credit Suisse First Boston, June 3, 2005.

million tons, which as with cement was at an all time high.⁷ Figure 9 shows the historical relationship between the demand for aggregates and the price of the commodity.

Figure 9 Demand and Price Relationship for Aggregates



Domestic prices for aggregates have trended upward with increasing demand due in part to costs for fuel, power, freight, and environmental compliance.⁸ However, prices have been stable over the last three years. This suggests that prices for aggregates were not a contributing factor in low bids exceeding the Department's estimates.

The price of aggregates reflected in Figure 9 does not include costs for lime treatment, which is used on occasion to alleviate moisture sensitivity, the cause of stripping of asphalt from the aggregates. The cost of such treatment is typically six

⁶Tim Grogan, "Getting Back to Normal," *Engineering News Record*, December 19, 2005.

⁷David Brock, Roger Collison, "Building Materials," *Credit Suisse First Boston*, June 3, 2005.

to ten dollars per ton if a treatment facility is available, thereby doubling the cost of the aggregate. If the treatment equipment must be mobilized to the project site, the cost of providing the lime treatment can be around \$100 per ton. As the supply of aggregates declines a decline in the overall quality of the material is expected. This would increase the likelihood for such treatment in order to maintain the quality of the Department's work.

⁸David Brock, Roger Collison, "Buiding Materials," Credit Suisse First Boston, June 3, 2005.

Figure 10 summarizes aggregate use in California over the last few years and includes data regarding the material's cost at the production plant.

Figure 10 **California Aggregate Use and Value**

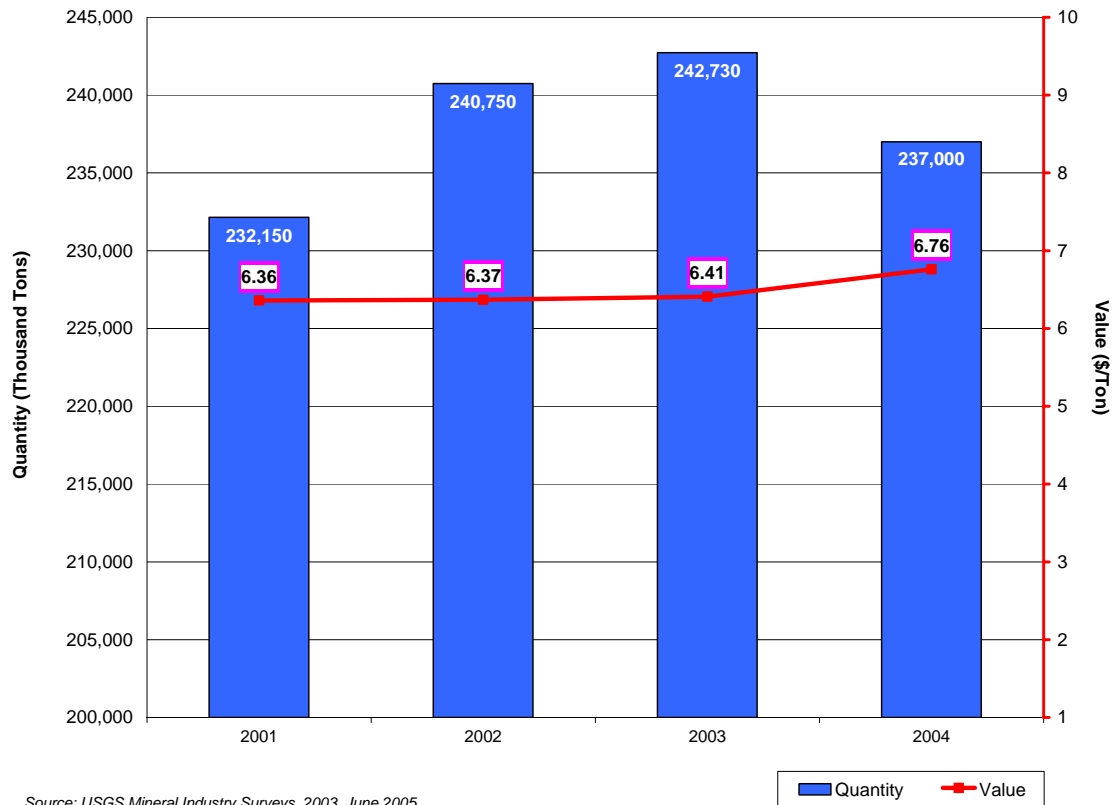


Figure 10 indicates that California aggregate consumption decreased in 2004 by approximately two and one half percent (2.5%). Data for the first quarter of 2005 (not included in figure 10) indicates a decline in consumption over the first quarter of 2004 of almost fourteen percent (14%).⁹

The demand for aggregates is expected to continue to rise moderately for the short term with increased infrastructure expenditures driving the need for additional material. In the long term, prices are anticipated to increase as supply slows. The supply is expected to decline because existing pits are becoming

⁹NOTE: Data for the entire 2005 year was not available at the time of this report.

exhausted, and permits for new pits are becoming more difficult to obtain.¹⁰ The permitting process for a new pit can take from two to ten years, often with a significant initial financial investment with no guarantee of approval.¹¹ Some areas of the south state, particularly portions of Riverside and San Bernardino counties, are already experiencing aggregate shortages with higher bid prices as a result.

D. Paving Asphalt

As indicated in the Executive Summary, Department management requested that the material market analysis be expanded to cover paving asphalt, another significant component of the Department's construction contract.

Figure 11 shows California paving asphalt prices over the last five (5) fiscal years. The paving asphalt market took a dramatic turn with prices rising from approximately \$143/ton in April 2002 to about \$164/ton July 2002. This represents a fifteen percent (15%) increase over the four month period and was driven primarily by a significant rise in oil prices. Following a slight decline in prices throughout the balance of 2002, the market again rose dramatically to the \$182/ton level by the spring of 2003, another eleven percent (11%) increase. Once again, the rise in paving asphalt prices was fueled primarily by the rise in oil prices.¹²

¹⁰David Brock, Roger Collison, "Buiding Materials," Credit Suisse First Boston, June 3, 2005.

¹¹"The Importance of Aggregates and Construction to California's Economy," Construction Materials Association of California, December 2004.

¹²Stephen H. Daniels, Tim Grogan, "Asphalt: Oil Prices Hammer Paving Costs," Engineering News Record, March 31, 2003.

Figure 11

Paving Asphalt Price Data

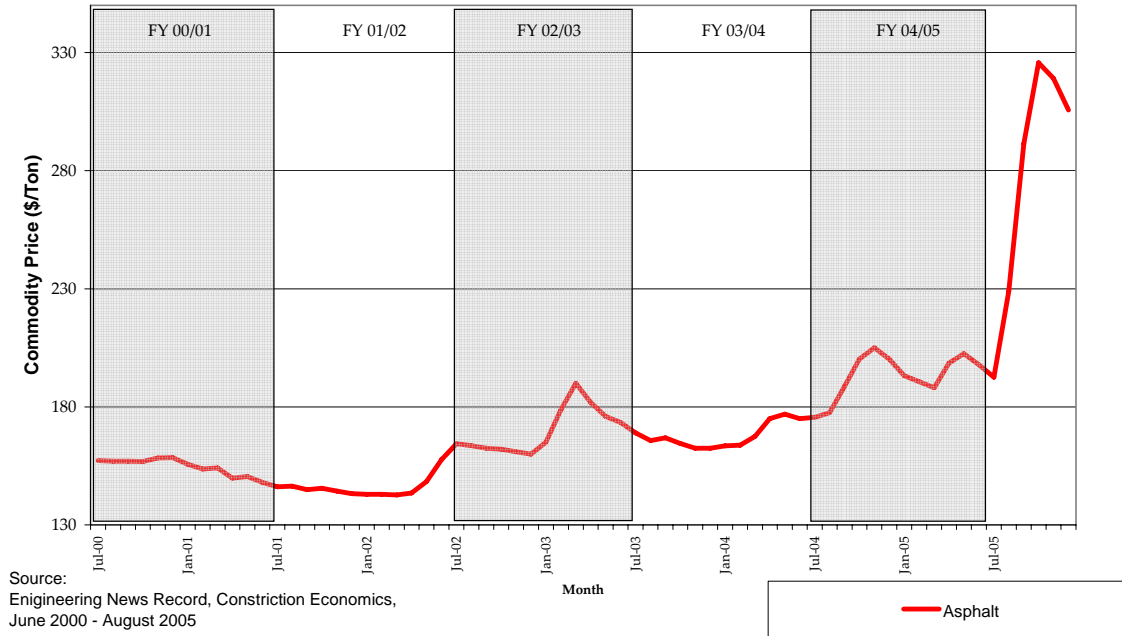


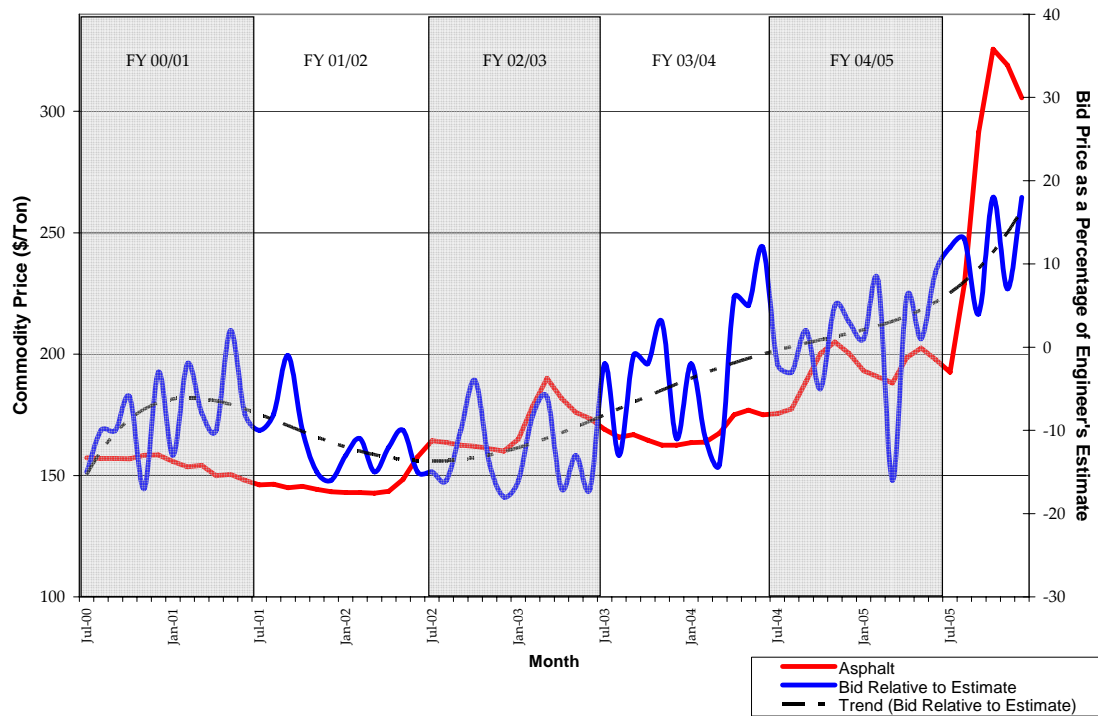
Figure 11 also reveals another downturn in the market in the later half of 2003 and a period of relatively stable prices through the winter of 2003-2004, a time of year typified by low to limited demand for the product throughout the United States. This stability was broken in the spring of 2004 with the combination of a seasonal increase in demand and a significant run up in oil prices, which continued throughout the balance of fiscal year 2004/2005.¹³ Finally, the data for paving asphalt prices during the first half of the current fiscal year reflects historically unprecedented levels. The price of paving asphalt peaked in November 2005 at \$319/ton, an increase of sixty-five percent (65%) since the start of the fiscal year.

Figure 12 shows that the timing of the rise in paving asphalt prices correlates to the trend in bid prices exceeding the engineer's estimates during the

¹³Ben Teplitz, US Asphalt Prices Seen Edging Higher," Engineering News Record, September 1, 2004.

last two fiscal years and continuing into the current fiscal year. Accordingly, paving asphalt price instability must be considered as one of the principal causes of low bid prices exceeding the engineer's estimates.

Figure 12 **Paving Asphalt Price and Bid Data**



With infrastructure construction likely to increase, the demand for paving asphalt is expected to rise. This demand coupled with continued high prices for oil will increase the price of paving asphalt. The market price of paving asphalt does not necessarily increase nor to a lesser extent decrease based on oil prices.¹⁴

One of the state's largest refineries experienced an explosion in August 2005 that resulted in a fifty percent (50%) decrease in production. Such a negative

¹⁴Tom Nicholson, "Market Forces Water Down Impact of High Oil Prices on Paving Costs," Engineering News Record, June 30, 2005.

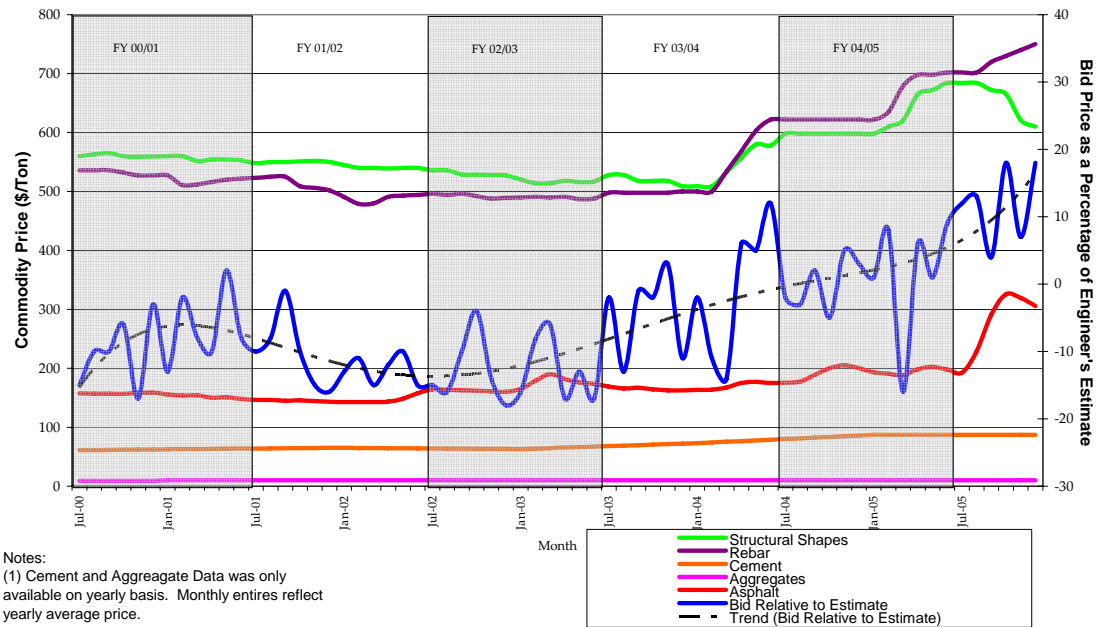
impact is expected to continue to push paving asphalt prices higher in the short-term.¹⁵

¹⁵Ben Tepitz, "Asphalt Prices Leaping Higher," Engineering News Record, September 2, 2005.

IV. Conclusions

Figure 13 shows the combined material prices and contract bid price as a percentage of the engineer's estimate.

Figure 13 Composite Material Price and Bid Data



The trend of increasing bid prices correlates with the combination of price increases for steel, cement and paving asphalt. Conversely, it appears that the relative stability of prices for aggregates was not a contributing factor in the trend. In addition, the projected instability of the markets for steel, cement, paving asphalt, and aggregates suggests that low bids may continue to exceed the Department's estimates for the near future. To the extent that the Department's estimates incorporate cost escalation forecasts, the impact of continued market instability on bid prices may be mitigated.